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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,129	09/20/2001	Osamu Yamaguchi	13409.6USWO	6292

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EXAMINER

SAVAGE, MATTHEW O

ART UNIT	PAPER NUMBER
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1723

DATE MAILED: 05/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,129

Applicant(s)

YAMAGUCHI ET AL.

Examiner

Matthew O Savage

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12 and 15-30 is/are pending in the application.
- 4a) Of the above claim(s) 6-12, 15-20, 24-27 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-5, 21-23, 28, and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1723

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-5, 21, 22, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of U.S. Patent 6,090,731 to Pike et al and EP 313,920.

With respect to claim 30, JP 5-2715 discloses a filter cartridge (see FIG. 1) including a first filtration layer 4 and a second filtration layer 3, the first filtration layer being prepared by winding a strip of a filament nonwoven around the second filtration layer so as to make a cylindrical form, the strip of filament nonwoven being a thermoplastic (e.g., polypropylene). JP '715 discloses the strip of filament nonwoven as being formed of thermoplastic fibers but fails to specify at least a part of the intersections of the thermoplastic fibers of the strip of filament nonwoven as being thermally bonded. Pike et al disclose a thermoplastic filament nonwoven obtained by thermal bonding of at least part of the fiber intersections (see example 1 in columns 10-11) and suggests that such an arrangement has high filtration efficiency and physical strength (see the lines 17-22 of col. 3). It would have been obvious to have modified the strip of filament nonwoven of JP '715 so as to have included the nonwoven disclosed by Pike et al in order to provide a filtration material having high filtration efficiency and

physical strength. JP '715 fails to specify the strip as being arranged in a twill form. EP '920 discloses the concept of winding a filter media in a twill form (see FIG. 3) and suggests that such a configuration prevents deformation of the media due to fluid pressure thereby enabling efficient removal of particles (see lines 25-33 of col. 6). It would have been obvious to have modified the combination suggested by JP '715 and Pike et al so as to have included the twill configuration as suggested by '920 in order to increase the filtration efficiency of the apparatus. '715 discloses a second filtration layer capable of removing particles of a smaller diameter than the first filtration layer since the fibers of the second layer are finer than the fibers of the first layer. '715 fails to specify the initial 80% trapped particle diameter in the second filtration layer as being .05- .9 times as large as an initial 80% trapped particle diameter in the first filtration layer, however, such a modification would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

Concerning claim 2, '920 discloses a strip of non-woven turned into pleated matter having 4-50 pleats (see FIG.6).

As to claim 3, '920 discloses part of the pleats being arranged in a non-parallel manner (e.g., the adjacent sides of each pleat being non-parallel to each other, see FIG. 5).

Concerning claims 4-5, '715 and '920 fail to specify the recited void rates, however, such modifications would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

With respect to claim 21, Pike et al a thermoplastic fiber being a thermally adherant composite fiber that includes a low melting point resin and a high melting point resins, the difference in melting points as being 10 degrees C or more (see lines 18-21 of col. 4).

Concerning claim 22, Pike et al discloses the combination of linear low density polyethylene and polypropylene (see lines 58-59 of col. 4).

Concerning claim 28, '715 and '920 fail to specify the recited strip width and product of the width and mass per unit area values, however, such a modification would have been obvious in order to optimize the filter for a particular application (see In re Antonie, F.2d 618, 195 USPQ 6 (CCPA 1977)).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 5-2715 in view of Pike et al and EP 313,920 as applied to claim 1 above, and further in view of U.S. Patent 5,652,041 to Buerger et al.

Pike et al discloses that it is known to thermally bond intersections of a nonwoven by calendaring (see lines 5-7 of col. 2) but fail to specify to intersections that are bonded by thermal compression by means of a heat embossing roll. Buerger et al that is conventional to carry out thermal bonding with heated embossing/calender rolls (see lines 18-23 of col. 6). It would have been obvious to have modified the combination suggested by JP '715, Pike et al, and '920 so as to have included thermal point bonding carried out by heat embossing rolls as suggested by Buerger et al in order provide a stronger filter media formed by a conventional point bonding process.

Claim 30 would be allowable if amended to specify the filaments of the strip formed by a spun laying method and as being aligned with longitudinal edges of the strip to produce openings having a length oriented along a length of the strip and a width oriented between longitudinal edges of the strip, wherein the length of the openings is substantially greater than the width of the openings as taught on pages 24-25 of the instant specification.

Applicant's arguments filed on 2-13-04 have been fully considered but they are not persuasive.

Applicant's argument that that JP '715 fails to disclose layers that are different from one another is not agreed since the reference clearly discloses a downstream layer that is capable of removing particles that are smaller than that removed by the upstream layer.

Applicant argues that the combination of JP '715 and Pike et al is improper since the references are non-analogous to one another, however, it is held that combination of the references is proper since they both disclose nonwoven fabrics formed of thermoplastic filaments.

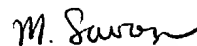
Applicant argues also that the combination of EP '920 with JP '715 is improper, however, it is held that such a combination is proper since both references disclose inventions that involve the winding of a nonwoven strip to produce a cylindrical filter element.

Art Unit: 1723

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew O Savage whose telephone number is (571) 272-1146. The examiner can normally be reached on Monday-Friday, 6:00am-2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda W. Walker can be reached on (571) 272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Matthew O Savage
Primary Examiner
Art Unit 1723

mos

May 3, 2004